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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/881,086	06/13/2001	Richard J. Markle	2000.076000/TT4638	8005

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EXAMINER

UMEZ ERONINI, LYNETTE T

ART UNIT PAPER NUMBER

1765

DATE MAILED: 01/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/881,086

Applicant(s)

MARKLE, RICHARD J.

Examiner

Lynette T. Urnez-Eronini

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/7/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-74 is/are pending in the application.
- 4a) Of the above claim(s) 1-7 and 23-74 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 8-22 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9/25/02.
- 4) ☐ Interview Summary (PTO-413) Paper No(s): _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of claims 8-22 and 46-60 are in Paper filed 10/7/2003 is acknowledged. The traversal is on the ground(s) that since claims 46-60 are claims to "means" for practicing the process claims set forth in Group III claims (i.e., claims 8-22) and are linking claims, then according to the MPEP § 806.05(e), a "means" claim is a linking claim and must be examined with the elected invention or claims 46-60 should be included in Group III claims (i.e. 8-22). This is not found persuasive because it has been shown that claims 8-22 and claims 46-60 are distinct because they are respectively directed to a CMP method and CMP system and have separate classification, 438/692 and 156/345. Lastly, it would be a burden to the examiner to search different inventions.

The requirement is still deemed proper and is therefore made FINAL.

Claim Objection

2. Claim 8 is objected to because of the following informalities: "abrasive slurry is contacts the process layer and the polishing pad" has a grammatical error. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 8-12, 14-16, 20, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Sasaki et al. (US 5,770,095).

Sasaki teaches. "Reference numeral **11** in FIG. 1 denotes a rotatable vacuum-chuck holder. To the vacuum-chuck holder **11**, a substrate **12** to be polished is vacuum-chucked in such a way that the surface of the substrate **12** is opposed to a polishing pad **13**. The polishing pad **13** is mounted on a rotatable polishing table **14** disposed underneath of the vacuum chuck holder **11**. An exhaust port of a polishing agent supply pipe **15**, which is connected to a polishing agent tank (not shown), is extended near a polishing pad **13**. The polishing agent supply pipe **15** comprises a means for controlling a supply of a polishing agent **16**" (column 6, lines 1-11). Sasaki describes the polishing agent used in CMP (column 6, lines 37-43). Sasaki further teaches, "Furthermore, a similar effect can be obtained even if as the chemical agent specific to a film material to be etched, use is made of an agent capable of forming a chelate compound . . . , such as . . . a mixture containing . . . ethylenediamine (same as applicants' gettering agent), . . ." (column 8, lines 20-29). The above reads on,

A chemical mechanical polishing method, comprising:

applying an abrasive slurry comprising a gettering agent to a polishing pad, the gettering agent having an affinity for am material to be removed; and

causing a relative motion between a process layer on a wafer and the polishing pad while the polishing pad is in contact with the process layer, wherein the abrasive slurry contacts the process layer and the polishing pad, **in claim 8**;

wherein the gettering agent has an affinity for copper, **in claim 9**;

wherein the gettering agent is selected from the group consisting of ethylenediamine, **in claim 10**;

A chemical mechanical polishing method, comprising:

applying an abrasive to a polishing pad;

causing a relative motion between a wafer and the polishing pad for a period of time while the polishing pad is in contact with the wafer, wherein the abrasive slurry is in contact with the wafer and the polishing pad, and

introducing a gettering agent into the abrasive at a predetermined time during the period of time, **in claim 14**;

wherein the gettering agent has an affinity for copper, **in claim 15**; and

wherein the gettering agent is selected from the group consisting of ethylenediamine, **in claim 16**.

Sasaki also teaches, "However, to polish a Cu film at a high rate without scratches . . . , the Cu etching rate must be raised by increasing the amount of the component responsible for Cu etching contained in the polishing slurry. If the

component is used in an increased amount," (column 1, lines 41-47), which suggests:

regulating an amount of the gettering agent in the abrasive slurry according to a desired material removal rate, **in claim 11 and 20;**

wherein regulating the amount of the gettering agent comprises: increasing the amount of the gettering agent in the abrasive slurry to increase a material removal rate; and

decreasing the amount of the gettering agent in the abrasive slurry to decrease the material removal rate, **in claims 12 and 21.**

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 17-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (US '095), as applied to claim 14 above.

Sasaki differs in failing to teach wherein the gettering agent is introduced at a beginning, an intermediate time during, and near an end of the period of time, respectively in claims 17-19.

It is the examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Sasaki by introducing the gettering agent at time during the polishing for the purpose of removing unwanted material on the wafer surface.

8. Claims 13 and 22 under 35 U.S.C. 103(a) as being unpatentable over Sasaki (US '095) applied to claims 8 and 14 respectively above.

Sasaki differs in failing to teach regulating a material removal rate according the equation as specified in claims 13 and 22.

It is the examiner's position that it would have been obvious to one having ordinary skill in the art at the time of the claimed invention to modify Sasaki by employing any empirical equation, which can be used in regulating a material removal rate for the purpose of obtaining the claimed invention.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 571.272-1470. The examiner is normally unavailable reached on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 517-272-1435. The fax phone numbers for the organization where this application or proceeding is assigned is 571-273-0223.

Lynette T. Umez-Eronini
ltue

December 29, 2003